

TABLE 18 - ENERGY EFFICIENT AND COMFORTABLE TRUCK CABS: ANTI-IDLING DEVICES FOR HEAVY DUTY VEHICLES

This is an issue of great importance to DOE and one in which we have been very active for 1 ½ years. The problems involved in idling were pointed out in an original technical report, funded by DOE, in 1986 by Argonne National Laboratory.

Based on the current usage of fuel, its cost to the nation and the trucking industry, and the enormous quantities of exhaust gases emitted to the atmosphere, the Office of Heavy Vehicle Technologies of the U.S. Department of Energy has initiated a program to educate long-haul truckers in the benefits of reducing truck engine idling by using separate devices for cab heating/cooling and engine heating.

Argonne National Laboratory engineers estimate that long-haul heavy trucks (classes 7 and 8) idle their engines for up to 1890 hours per year, mostly in the winter to keep the cab and engine warm or in the summer to run the cab air conditioner while the operator rests. There are approximately 480,000 Class 7 and 8 trucks that travel more than 200 miles per day and stop overnight en route to destinations. Since the average truck engine burns about one gallon of diesel fuel per hour during idling, Argonne estimates that these trucks consume about 900 million gallons of diesel fuel per year by idling, thereby increasing U.S. dependence on imported oil. Idling also has an adverse effect on the environment. Burning 900 million gallons of diesel fuel produces approximately 10 million tons of CO₂, 60,000 tons of NO_x, and 100,000 tons of CO. Additionally, idling produces engine wear that requires increased maintenance and repair. The bottom line is that the average long-haul, heavy-duty truck operator could reduce operating costs simply by reducing the amount of time spent idling.

Idling time can be greatly reduced by the use of direct-fired burners for cab and engine block heating, thermal storage devices for heating and cooling, and auxiliary power units for heating, cooling, and electrical power. These devices are commercially available, are relatively inexpensive to operate, and appear to be robust. More important, their fuel consumption is only about 10 to 15% that of a truck diesel engine, thereby saving fuel costs and reducing emissions. Argonne estimates that the average long-distance hauler can save about \$1900 per year in fuel costs alone. Additional savings are possible because engine maintenance intervals are increased and engine wear is decreased. Payback on investment in these devices is often 2 years or less, depending on their use. If all long-haul trucks use these devices, the total fuel savings would be approximately 1% of all fuel used for surface transportation in the United States.

Why do U.S. operators idle so much when European tractors are limited to idle times of 3 minutes and 20-30% of Canadian long-haul tractors have these energy-saving auxiliary devices? Habit? Psychology? Unwillingness to invest the capital? Probably some of each, but in any case, the U.S. Department of Energy, consistent with its mission to reduce petroleum energy consumption and emissions, wants to help educate truck operators by pointing out savings in the fuel and maintenance that can be achieved by avoiding

excessive idling. To this end, the DOE Office of Heavy Vehicle Technologies has put together a traveling display designed and manned by Argonne National Laboratory. Over the next two years, if funding permits, the display will be shown at various truck shows nationally. DOE and one of its customers, the American Trucking Association, are continually exploring ways to bring this issue to the attention of truck operators. DOE has recognized the effectiveness of Clean Cities in developing a focus on key issues such as unnecessary idling and its undesirable effects in the urban environment. The partnership with Clean Cities is now one in the panoply of efforts to bring this matter to the public's attention.

There are several legislative initiatives that would also serve as incentives for the trucking industry to reduce fuel consumption, help improve air quality, encourage greater industry compliance, and also be appropriate to mitigate the idling problem. The options are as simple as low-interest loans or tax subsidies for fleet operators and individual truckers who would install such devices. It is hoped that the experience within the Clean Cities Program in facilitating adoption and use of advantageous and desirable urban practices can be utilized to assist in reducing the idling of heavy vehicle diesel engines and thus contribute significantly to the achievement of DOE's goals of saving energy, reducing emissions, and reducing our nation's dependence on imported petroleum fuels.